706.4 Measurement

No field measurements are required. Measurement is calculated from known dimensions as follows:

A. Type A—Grading and Drainage Projects

[Project length (PL) minus bridge and exception* length (BL)] times [right-of-way width or Engineer-specified width (RW) minus roadbed width (RBW)] equals _____ square feet divided by 43,560 ft²/acre equals pay quantity in acres.

[Project length (PL) minus bridge and exception* length (BL)] times [right-of-way width or Engineer-specified width (RW) minus roadbed width (RBW)] equals _____ square meters divided by 10,000 m² equals pay quantity in hectares.

(PL – BL) x (RW – RBW) = ____ft² ÷ 43,560 ft²/acre = pay quantity in acres

(PL – BL) x (RW – RBW) = ____m² ÷ 10,000 m² = pay quantity in hectares

B. Type B: Base and Paving Projects

[Project length (PL) minus bridge and exception* length (BL)] times [unpaved shoulder width (SW) plus 6 ft for each roadway side (RS)] = ___ square feet divided by 43,560 ft²/acre= pay quantity in acres.

[Project length (PL) minus bridge and exception* length (BL)] times [unpaved shoulder width (SW) plus 1.8 m for each roadway side (RS)] = ___ square meters divided by 10,000 m² = pay quantity in hectares.

(PL – BL) x (SW + 6RS) = ___ ft² ÷ 43,560 ft²/acre = pay quantity in acres

(PL – BL) x (SW + 1.8RS) = ___ m² ÷ 10,000 m² = pay quantity in hectares

C. Type C: Complete Project

[Project length (PL) minus (bridge and exception* length (BL)] times [right-of-way width or Engineer-specified width (RW) minus plan paved surface width (PPW)] equals square feet divided by 43,560 ft²/acre= pay quantity in acres.

[Project length (PL) minus (bridge and exception* length (BL)] times [right-of-way width or Engineer-specified width (RW) minus plan paved surface width (PPW)] equals square meters divided by 43,560 ft²/acre= pay quantity in hectares.

(PL – BL) x (RW – PPW) = ____ft² ÷ 43,560 ft²/acre = pay quantity in acres

(PL – BL) x (RW – PPW) = ____m² ÷ 10,000 m² = pay quantity in hectares

*Exception means major road intersections and Plan exceptions, not side roads, drives, etc.

706.4.01 Limits

General Provisions 101 through 150.

706.5 Payment

The turf establishment area will be paid for at the Contract Price per acre (hectare). Payment is full compensation for equipment, labor, seed, fertilizer, and any other materials necessary to complete the Item.

Payment will be made under:

Item No. 706	Turf establishment, type_____	Per acre (hectare)

706.5.01 Adjustment

General Provisions 101 through 150.

Section 708—Plant Topsoil

708.1 General Description

This work includes furnishing and applying approved plant topsoil at the locations shown on the Plans or as directed by the Engineer and according to these Specifications.

708.1.01 Definitions

General Provisions 101 through 150.

708.1.02 Related References

A. Standard Specifications

Section 104—Scope of Work

Section 106—Control of Materials

Section 107—Legal Regulations and Responsibility to the Public

Section 893—Miscellaneous Planting Materials

B. Referenced Documents

General Provisions 101 through 150.

708.1.03 Submittals

General Provisions 101 through 150.

708.2 Materials

A. Plant Topsoil Materials

Use plant topsoil that meets the requirements of Subsection 893.2.01.

B. Sources of Material

Except as modified in this Section, furnish plant topsoil material according to Section 106.

1. Plant Topsoil Obtained from the Work

   The requirements of Subsection 104.06, "Right in and Use of Material Found on the Work" are in effect for plant topsoil obtained from the Work.

   a. Obtain the quantity of plant topsoil called for on the Plans.
   b. Use plant topsoil material present on the Project as long as the topsoil meets the Specifications applying to the Item.
   c. Excavate for topsoil only within the construction limits of the Project. Obtain topsoil from embankment areas, excavation areas, or borrow excavation pits.
   d. When obtaining plant topsoil from borrow excavation pits or the roadway, cross section the excavated areas a second time before beginning regular excavation.

2. Plant Topsoil Furnished by the Contractor

   When insufficient material is obtainable from the Work, obtain additional topsoil offsite.

   The Contract Price will include the costs necessary to locate, purchase, and deliver the required amount of acceptable material to the Work.

708.2.01 Delivery, Storage, and Handling

For the purpose of measurement, the Contractor may haul plant topsoil in any type of vehicle, provided the vehicle when loaded to capacity and traveling over public roads and streets meets the provisions of Subsection 107.14, "Load Restrictions."

When using pans or scrapers, the capacity will be the manufacturer's rated capacity.

708.3 Construction Requirements

708.3.01 Personnel

General Provisions 101 through 150.

708.3.02 Equipment

General Provisions 101 through 150.

708.3.03 Preparation

General Provisions 101 through 150.

708.3.04 Fabrication

General Provisions 101 through 150.

708.3.05 Construction

A. General Requirements

Unless otherwise specified in the Plans, uniformly spread plant topsoil to at least 2 in (50 mm) loose depth.

1. Erosion Control

   Only use plant topsoil on slopes where the gradient is 3:1 or flatter.

   To reduce loss of plant topsoil by erosion, place the soil shortly before and in conjunction with grassing operations.

   Place topsoil and complete grassing within specified seasonal limits.

2. Spreading Procedure

   Before applying plant topsoil, scarify the designated areas 6 in to 8 in (150 mm to 200 mm) deep.

   Mix the plant topsoil, lime when required, and the first application fertilizer with the underlying soil when preparing the soil for grassing. Spread and smooth the topsoil uniformly.

B. Plant Topsoil Obtained From The Work

1. Stockpiling

   When obtaining topsoil from the work site, strip and stockpile the topsoil in suitable locations in advance of grading operations.

   Just before grassing, remove the plant topsoil from the stockpile and spread it over the designated areas.

   If grassing is started before grading operations are finished, if feasible, haul the topsoil from undisturbed areas before grading begins directly to the areas designated for the topsoil, eliminating the cost of stockpiling and removing the stockpile.

2. Surplus Material

   When stockpiling more material than specified in the Contract, use the surplus material as additional plant topsoil material if directed by the Engineer.

   After constructing the Item, use the surplus material left in the stockpiles to maintain the Item or to fill washes that occur within a reasonable haul distance.

   Otherwise, remove or dress down the remaining material as directed by the Engineer, without additional compensation.

C. Plant Topsoil Furnished by Contractor

When locating, obtaining, and paying for plant topsoil from pits outside the right-of-way, excavate the topsoil and haul it directly to the designated areas just before the planting begins.

Notify the Engineer, according to Subsection 893.2.01, “Plant Topsoil,” of the source of the material. The Engineer will inspect the topsoil. If the material is suitable, the Engineer will specify the permissible excavation depth. If the permissible excavation depth is exceeded, the material obtained from the areas will be rejected.

708.3.06 Quality Acceptance

After placing the plant topsoil, replace material lost by erosion at no expense to the Department.

708.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

708.4 Measurement

Accepted plant topsoil for this Item is measured by the cubic yard (meter) of material delivered in vehicles to the designated areas for plant topsoil. Only vehicles loaded to full capacity are measured for payment. No payment will be made for material delivered in partially filled vehicles.

Plant topsoil is not measured for payment when it is used for an Item that includes the cost of the plant topsoil in the price bid per Unit for the Item.

708.4.01 Limits

General Provisions 101 through 150.

708.5 Payment

Plant topsoil, eligible for payment, will be paid for at the Contract Unit Price per cubic yard (meter). Payment is full compensation for furnishing the material, removing objectionable matter from the material, loading and unloading,

stockpiling and removing from the stockpile, hauling, spreading, preparing the ground, pulverizing, mixing, remixing, and for all maintenance.

Payment will be made under:

Item No. 708.	Plant topsoil	Per cubic yard (meter)

708.5.01 Adjustments

General Provisions 101 through 150.

Section 710—Permanent Soil Reinforcing Mat

710.1 General Description

This work includes furnishing and placing a permanent mat over prepared areas according to the Plans or as directed by the Engineer.

710.1.01 Definitions

General Provisions 101 through 150.

710.1.02 Related References

A. Standard Specifications

Section 700—Grassing

Section 881—Fabrics

B. Referenced Documents

QPL 49

710.1.03 Submittals

General Provisions 101 through 150.

710.2 Materials

Use materials listed in the QPL 49 .

Ensure that materials meet the following requirements.

A. Preformed Mat

Use mat with a web of mechanical or melt-bonded polymer nettings, monofilaments, or fibers entangled to form a dimensionally stable matrix. Bond the mat with one of the following:

- Polymer welding
- Thermal fusion
- Polymer fusion
- Fibers placed between two high-strength, biaxially oriented nets bound by parallel-lock stitching with polyolefin, nylon, or polyester threads

Use a mat with enough strength and elongation to limit stretching and maintain its shape before, during, and after installation under dry or wet conditions. Provide a mat with stabilized components that avoid ultraviolet degradation and are inert to chemicals normally encountered in a natural soil environment. Ensure that the mat conforms to the following physical properties:

Property	Minimum Value	Test Method
Thickness	1/2 in (13 mm)	
Weight	0.60 lbs/yd² (325 g/m²)	
Roll width	38 in (965 mm)	